



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,750	01/28/2004	Masaki Matsushita	60716 (70904)	5739

7590 03/21/2006

Richard J. Roos
EDWARDS & ANGELL LLP
P.O. Box 55874
Boston, MA 02205

EXAMINER

VO, ANH T N

ART UNIT	PAPER NUMBER
----------	--------------

2861

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/767,750

Applicant(s)

MATSUSHITA ET AL. 

Examiner

Anh T.N. Vo

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 2-5, 8, 9, 12-15, 18, 19 and 31-36 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21-30 and 37-42 is/are allowed.
- 6) ☒ Claim(s) 1, 10, 11 and 20 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 16 and 17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/20/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election /Restriction

1. Applicant 's election without traverse of invention III mailed 1/20/2006 is acknowledged.
2. Claims 2-5, 8-9, 12-15, 18-19, 22-25, 28-29 31-36 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to non-elected invention. Applicant is reminded that these claims should be cancelled.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

The references cited on PTO 1449 have been considered except.

Specification

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 10 are rejected under 35 USC 102 (b) as being anticipated by Sugimoto et al (US 5,565,899).

Sugimoto et al discloses in Figures 17 and 20-22 an ink jet recording apparatus comprising:

- an ink containing section (1100 or 1000) for storing ink therein;
 - an ink supplying path (1600a) for supplying the ink stored in the ink containing section to a print head (400a) (column 2, lines 7-13);
- the ink supplying path (1600a) therein includes a filter (700a), which generates negative pressure when the ink is supplied, the negative pressure being smaller than ink absorbing pressure of a nozzle of the print head (400a) (column 19, lines 35-62 and column 20, lines 15-20); and
- a detector (700b) for detecting whether the ink is present or absent in the ink supplying path (1600a) (column 21, lines 50-56).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior arts are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 and 20 are is rejected under 35 USC 103 (a) as being unpatentable over Saikawa (US Pat. 6,158,855) in view of Sugimoto et al (US 5,565,899).

Saikawa discloses in Figures 4-8 an ink jet recording apparatus comprising:

- an ink containing section (301 or 301Y) for retaining ink (column 6, lines 11); and
- an ink supplying path (210) for supplying the ink from the ink containing section (301Y) to a print head (215), wherein: the ink supplying path (210) therein includes a filter (213), which

Art Unit: 2861

generates a negative pressure is approximate 15 kPa or 18kPa, which is applied to the ink supplying path when the ink is supplied (column 6, lines 60-67 and column 7, lines 1-13).

However, Saikawa does not disclose a detector for detecting whether the ink is present or absent in the ink supplying path and a filter which generates a negative pressure of not more than 2.0 kPa and is applied to the ink supplying path when the ink is supplied

Nevertheless, Sugimoto et al discloses in Figures 20-22 an ink jet recording apparatus comprising a detector (700b) for detecting whether the ink is present or absent in the ink supplying path (1600a) (column 21, lines 50-56).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teaching of Sugimoto et al. in the Saikawa ink jet recording apparatus for the purpose of detecting ink that is present or absent in the ink supplying path.

It is noted that the recitation “a filter which generates a negative pressure of not more than 2.0 kPa and is applied to the ink supplying path when the ink is supplied” instead of “a filter which generates a negative pressure being approximate 15 kPa or 18 kPa and being applied to the ink supplying path when the ink is supplied” as recited in the Saikawa reference is a design expedient for one of ordinary skill in the art for the purpose of controlling ink flow rate at the ink supplying path. Also, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. *In re Aller*, 105 USPQ 233

Allowable Subject Matter

Claims 6 and 16 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because none of the prior art references of record discloses an image forming apparatus comprising an ink containing section

Art Unit: 2861

therein includes a porous ink absorbing body for retaining ink that the image forming apparatus satisfies: $4.\eta / D_N - |Ph| > 4.\eta / F' > |P\mu| + |Pi|$

$$P\mu = (k/A). \{\mu.L.(N.R)^2 / S\}.Q$$

Claims 7 and 17 would be allowable if rewritten to include all of the limitations of the base claim and any intervening claims. This claim would be allowable because none of the prior art references of record discloses an image forming apparatus comprising an ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section, the image forming apparatus satisfies: $4.\eta / D_N - |Ph| > 4.\eta / F' > |P\mu| + |Pi|$

$$P\mu = (k/A). \{\mu.L.(N.R)^2 / S\}.Q$$

Claims 21-30 are allowable. These claims would be allowable because none of the prior art references of record discloses an image forming apparatus comprising: an ink containing section for retaining ink; and an ink supplying path for supplying the ink from the ink containing section to a print head, the ink supplying path therein including a filter, wherein: the image forming apparatus satisfies: $F' = 4\eta / P_m$ and $P_m \leq 2000$.

Claims 37-38 are allowable. These claims would be allowable because none of the prior art references of record discloses an image forming apparatus comprising: an ink containing section including a porous ink absorbing body for retaining ink; and an ink supplying path for supplying the ink from the ink containing section to a print head, wherein: the ink supplying path therein includes a filter, the image forming apparatus satisfies:

$$4.\eta / D_N - |Ph| > 4.\eta / F' > |P\mu| + |Pi|$$

$$P\mu = (k/A). \{\mu.L.(N.R)^2 / S\}.Q$$

(where the coefficient $(k/A) = 485$)

$$\mu_{TK} = \alpha \cdot \exp(\beta / T_k),$$

$$\alpha = \mu_{25} / \exp(\beta / 298),$$

Art Unit: 2861

$$\beta = \text{Ln}\{0.42.\text{Ln}(\mu_{25}) + 4.71\}/(1/273 - 1/298)$$

(F'=F when an opening of the filter is circle; F'= $\sqrt{2}$.F in other cases)

Claims 40-42 are allowable. These claims would be allowable because none of the prior art references of record discloses an image forming apparatus, comprising: an ink containing section including a porous ink absorbing body for retaining ink; and an ink supplying path for supplying the ink from the ink containing section to a print head, wherein: the ink containing section therein includes a porous ink absorbing body for retaining ink, the ink absorbing body being compressed before the ink absorbing body is contained in the ink containing section, and the image forming apparatus satisfies:

$$4.\eta / D_N - |Ph| > 4.\eta / F' > |P\mu| + |Pi|$$

$$P\mu = (k/A). \{\mu.L.(N.R)^2 / S\}.Q$$

(where the coefficient (k/A)=485)

$$\mu_{TK} = \alpha.\exp(\beta/T_k),$$

$$\alpha = \mu_{25} / \exp(\beta/298),$$


$$\beta = \text{Ln}\{0.42.\text{Ln}(\mu_{25}) + 4.71\}/(1/273 - 1/298)$$

(F'=F when an opening of the filter is circle; F'= $\sqrt{2}$.F in other cases)

CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Anh Vo. whose telephone number is (571) 272-2262.

The fax number of this Group 2800 is (571) 273-8300.


 ANH T.N. VO
 PRIMARY EXAMINER
 March 17, 2006